

## CLAIMS

What is claimed is:

1. A system, comprising:
  - a bridge;
  - a logic device; and
  - a plurality of slots coupled to the bridge via a bus segment and to the logic device, each slot being capable of receiving an add-in card; wherein the logic device determines whether a card is installed in any of the slots and, if a card is installed in a slot, the logic device determines in which slot the card is installed and causes the bridge to configure the bus segment based on location of cards, if any, in the slots.
2. The system of claim 1 wherein the logic device comprises a programmable logic device.
3. The system of claim 1 wherein the logic device receives presence signals associated with each slot, the presence signals for a particular slot encode whether or not a card is present in that particular slot.
4. The system of claim 1 wherein each add-in card comports with any of a plurality of card types and the bridge configures the bus segment based on card type as well as location of cards.
5. The system of claim 1 wherein the bridge configures the bus segment by selecting one of a plurality of selectable clock frequencies for the bus segment.
6. The system of claim 1 wherein the bridge configures the bus segment by selecting a higher clock frequency if a card is installed in a predetermined slot and no other cards are installed in other slots or by selecting a lower clock frequency if a plurality of cards are installed in the slots or only a single card is installed in a slot other than the predetermined slot.

7. The system of claim 5 wherein the bridge also configures the bus segment by causing one of a plurality of selectable voltage levels to be applied to the bus segment.
8. The system of claim 1 wherein the bridge configures the bus segment by causing one of a plurality of selectable voltage levels to be applied to the bus segment.
9. The system of claim 1 wherein the bus segment is a PCI-X bus segment.
10. A logic device that contains a plurality of gates configured to receive presence signals from a plurality of slots into which add-in cards may be installed, the presence signals indicating whether a card is installed in a particular slot, the logic device's gates are further configured to cause a bridge device to configure a clock frequency of a bus segment based on slot location for the installed cards.
11. The logic device of claim 10 wherein the slots comprise a middle agent slot and an end-agent slot, the middle agent slot being electrically disposed between the bridge and the end agent slot, and the gates of the logic device are further configured to individually determine whether add-in cards are installed in the end agent slot and the middle agent slot.
12. A bridge device that contains a plurality of gates adapted to configure a bus segment based on a type of card installed on said bus segment and based on location of said card on said bus segment.
13. The bridge device of claim 12 wherein the bridge device is configured to couple to a logic device, and wherein the bridge device receives a signal from the logic device that causes the bridge device to configure the bus segment at speed that is lower than a rated speed of said card.

14. The bridge device of claim 13 wherein said bridge device receives a plurality of signals from slots into which a plurality of cards can be installed, said plurality of signals are indicative of types associated with cards that can be installed in said slots.

15. A system, comprising:

a bridge;  
a plurality of slots coupled to the bridge via a bus segment, each slot being capable of receiving an add-in card; and  
means for determining whether one or more cards are installed in any of the slots and, if one or more cards are installed in a slot or slots, for determining in which slot or slots the one or more cards are installed and for causing the bridge to configure the bus segment based on card location.

16. The system of claim 15 further comprising means for determining if a card is installed in a predetermined slot and, if so, for causing the bridge to configure the bus segment to operate at a speed that is lower than the rated speed at least one installed card.

17. The system of claim 15 further comprising means for setting a voltage for the bus segment based on card location.

18. A method usable in conjunction with configuring a bus segment, the method comprising:

determining location of one or more cards installed on the bus segment;  
and  
configuring the bus segment based on said location.

19. The method of claim 18 wherein configuring the bus segment comprises selecting a clock frequency.

20. The method of claim 18 wherein configuring the bus segment comprises selecting a bus segment voltage.

21. A method usable in conjunction with configuring a bus segment, the method comprising:

determining whether a card is located in a first of two slots coupled to the bus segment; and

if a card is installed in the first slot, preventing the bus segment from operating at a maximum speed permitted by the bus segment.

22. The method of claim 21 further comprising configuring the bus segment to operate at its maximum speed only if the second of the two slots has a card located therein.

23. The method of claim 22 wherein the bus segment is configured to operate at the maximum speed only if the card located in the second slot also is operational at the maximum speed.

24. The method of claim 21 further comprising configuring a voltage level associated with the bus segment based on location of the card.